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P525

United States Department of Agriculture,

BUREAU OF BIOLOGICAL SURVEY.

HENRY W. HENSHAW, Chief of Bureau.

DIRECTIONS FOR PREPARING SPECIMENS OF LARGE MAMMALS IN THE FIELD.

Specimens of large mammals, including everything from a mink to a moose, may be prepared roughly in the field and afterwards put in perfect condition by a taxidermist. The field preparation is not difficult and requires no special training. Any mammal can be skinned with a large pocket knife.

A "specimen" is understood to mean the complete skin of an animal and its skull. When a skin is saved, the skull of the same specimen should always be preserved, even if imperfect. Skins with perfect skulls are much more valuable, but skulls unaccompanied by skins are also of value and should be saved.

The preparation of a specimen in the field consists in: (1) Measuring, (2) making opening cuts, (3) removing skin, (4) applying pre-



FIG. 1.

servative, (5) drying skin, (6) preparing skull, (7) labeling skin and skull, (8) packing and shipping.

MEASURING.

A tape, preferably a steel one, should be used for all measurements. Three measurements should be taken (if possible while the carcass is still warm) as follows:

1. *Total length* from tip of nose to end of tail vertebræ (to end of bone, *not* end of hairs). In taking this measurement extend the body, neck, and tail as nearly in a straight line as possible. The smaller animals should be measured on a table or board, the larger ones on flat level ground (fig. 1). In the latter case drive a peg at the end of the nose and another at the end of the tail bone and measure the distance between, in a straight line. Never measure over the curves of the back.

2. *Length of tail* from base to end of vertebræ. This is taken by bending the tail up at right angles to the back and measuring from its base (on the upper side) to the end of the vertebræ (fig. 2).

3. *Length of hind foot* (held straight) from heel to point of hoof (fig. 3) or longest claw (fig. 4). In hoofed animals the "heel" is called the hock.

NOTE.—This pamphlet supersedes Biological Survey Circular 49, of which it is a revision.

In the case of large game animals the height at shoulder is important, but is difficult to take accurately. It is best measured between pegs, one driven at the top of the shoulder the other at the soles or hoofs of the forefeet, the legs being straightened and held in the position natural to the animal when standing in life, with the bottoms of both forefeet on the same plane and against the stake. The weight of large animals should be recorded whenever possible.



FIG. 2.

OPENING CUTS.

Make a single straight slit down the middle of the belly, extending from the front end of the breastbone to the base of the tail. In large animals (as deer) this cut should be carried forward to the throat and backward to the tip of the tail; and in skunks and other fat animals the tail should be slit on the underside. In all large mammals four additional cuts should be made, one extending down each leg. Begin at the foot (between the hoofs in the case of a hoofed animal; at the base of the toes in a clawed animal) and carry the cut along the back or inner side of each foot and up the hind side of each leg to join the main cut (fig. 5).

In humid regions, especially in the Tropics, it is often necessary to treat mammals the size of a skunk in the same manner and to slit the tail for its entire length on the underside. If the legs and tail are not opened the hair is likely to slip and the skin to rot instead of drying. In the case of all soft-footed mammals the sole of the foot must be slit open to the toes in order to remove as much flesh and fat as possible and to allow direct application of a preservative. The cut should be made along the inner side of the footpads.

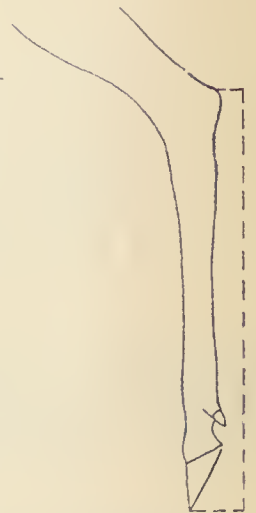


FIG. 3.

REMOVING SKIN.

After making the cuts, work the skin back until the "knee" joint can be pushed up and unjointed, leaving the lower bones attached to the foot. Skin the legs and feet (down to the toes if possible) and cut the flesh away from the bones, leaving the skin of the leg turned inside out. In small mammals and those up to the size of a coyote the bones of the lower part of the legs should be left attached to the skin; in large mammals the leg bones should be cut off at the ankle joint. Work the skin over the rump to base of tail, and,



FIG. 4.

after cutting all clear except the tail bone, make a short slit or two on the skin of the underside to assist curing, and draw out the bone. If this can not be done easily, use two sticks (or a split stick) and draw the bone through to get it out of the skin. If this fails, slit the underside for its entire length and skin out the tail bone. After skinning the legs and body continue working the skin over the neck and head, cut the cartilage of the bases of the ears where they are attached to the skull, and skin over the eyes, nose, and lips. Special care is necessary to avoid cutting the eyelids. The skin is now free from the carcass. Before anything further is done, unjoint the skull, taking great care not to cut the bone. Then tie a numbered

tag to the skull so that the skin to which it belongs may be certainly identified.

When the skin is off, clean it of adhering bits of fat and flesh, and finish work on the feet, making sure that the skin is separated from the bones as far down as possible. The skin of the head requires special attention. Cut away the flesh around the cartilage at the base of the ear and separate the skin of the back of the ear from the cartilage nearly down to the tip. This may be done by pushing the thumb down between the skin and the cartilage and working it loose, or by using a blunt tool in the same manner. The thick skin of the nose and lips should be pared down and laid open until it is thin enough to allow a preservative to pass quickly through to the roots of the hair.

HORNED ANIMALS.

Animals with horns require a T-shaped cut on the back of the head and neck. This cut should be made from the outside. First slit the skin from one horn to the other and carry the cut around the base of each horn. Then, from the middle of this cross cut, carry a cut down the middle line of the back of the neck far enough to let the horns out (fig. 6). In handling animals with horns, skin as far down the neck as possible in the usual way, unjoint the head (or cut off the neck, and take out the body. Then turn the skin right side out, skin the head, and take out the skull (with horns attached) through the slit in the back of the neck.

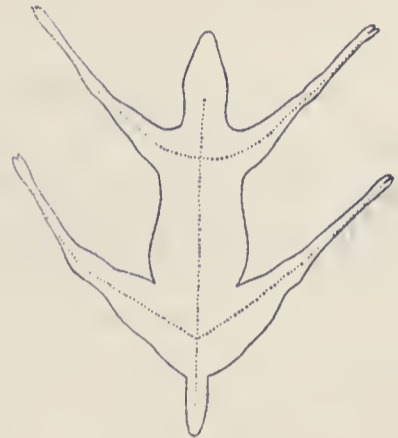


FIG. 5.

APPLYING PRESERVATIVE.

The main object of a preservative in any climate is to set the hair at once and prevent the outer thin skin, or epidermis, from slipping and taking the hair with it. For this purpose salt is sufficient. Common table salt is best, but coarse salt may be used. The addition of one part of powdered alum to five or six parts of salt is very effective but is not necessary except in damp weather or in the Tropics. Lay the skin flesh side up and rub salt into all parts of it; put plenty behind the ear cartilage, about the nose and feet, and in the tail. When the tail is not split open, fill it *all the way to the tip*.

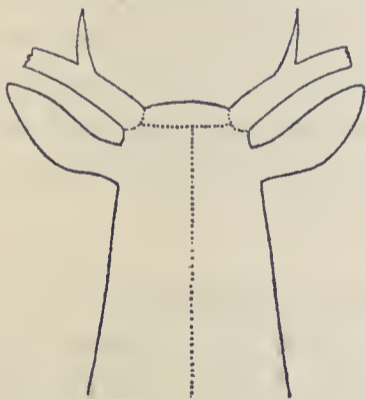


FIG. 6.

DRYING SKIN.

After the skin has been salted, fold in the head and legs, roll it into a bundle with the hair side out, and let it lie for 12 to 24 hours. The salt draws the moisture to the surface during this time, and a great deal drains off. The skin should then be hung over a line or pole in a shady place and allowed to dry slowly. In winter, or in damp climates, after it has dried in the shade for 10 to 15 hours it may be hung in the sun and dried more quickly; but a skin not cured by salt should never be dried in the sun. Never "stretch" a skin, and never hang a large skin on a nail. When first hung up, inspect the edges and if any part has not received proper attention apply more salt. While drying, examine a few times and open out any folds that may be found, exposing the soft places to the air.

PREPARING SKULL.

Carefully unjoint the skull from the neck and cut away the larger fleshy parts, including the tongue, being careful not to cut or break any of the bones. Scoop out the brains, with a stick or wire loop, and rinse out the brain cavity with water, but never cut or enlarge the natural opening in the back of the skull. Then hang up the skull to dry. In dry weather never leave a skull in the sun. Never boil a skull or attempt to clean it thoroughly while in the field, but allow the flesh that is not easily cut off to dry on the bone. If the lower jaw has been taken off in cleaning, tie it in place with a strong cord. Never put salt or other preservative on the skull. Salt or alum injures the bone.

LABELING SKIN AND SKULL.

Tie a strong label to the skin. It may be tied through one nostril and over the lip. On this label record the sex of the specimen, its number and measurements, the date and locality, and your own name. When labels are furnished by the Biological Survey they should be filled as follows (the measurements being recorded on the back):

BIOLOGICAL SURVEY, U. S. DEPARTMENT OF AGRICULTURE WASHINGTON, D. C.		
<i>Locality</i>	Galveston, Texas.	
<i>No.</i>	15	<i>Sex</i> Male.
<i>Date</i>	May 5,	1915.
<i>Name of collector</i>	James Smith.	

A strong tag bearing the same number as that on the skin, the sex, and the collector's name should be tied firmly to the skull. Use the utmost care to avoid mistakes in labeling skulls; that is, label the skull *as soon as it is skinned*, and be sure that the number is the same as that of the skin from which it came. Extra skulls (those not accompanied by skins) should be labeled with sex, locality, date, and collector's name.

PACKING AND SHIPPING.

As a rule specimens should be packed in boxes and shipped by express, charges collect. Skins may be sent in small bales covered with burlap, but are safer in boxes. They should be folded with the hair inside and packed down tightly. If skulls are shipped in the same box with skins, they should be well wrapped and put in a separate compartment. Straw, paper, or excelsior may be used for packing, but not cotton. Packages not exceeding the size or weight prescribed by the Postal Laws and Regulations for fourth-class or parcel-post matter, if securely wrapped or sewed in cloth, may be sent to the department by mail post free, under the department frank, but the legend "Parcel Post" should not be placed thereon. All packages, whether sent by mail or express, should be plainly marked with the shipper's name, and should be addressed: U. S. Biological Survey, Department of Agriculture, Washington, D. C.

United States Department of Agriculture,

BUREAU OF BIOLOGICAL SURVEY.

HENRY W. HENSHAW, Chief of Bureau.

INSTRUCTIONS FOR TAKING BIRD CENSUS, 1916.

Bird censuses were taken by voluntary observers during the summers of 1914 and 1915, and it is desired to continue the work during the summer of 1916. The returns for these two years were very satisfactory for the average farm conditions in the United States east of the Plains and north of North Carolina. While it is hoped that the censuses in this part of the country will be repeated this year with equally satisfactory results, it is especially desired that the present season yield a series of censuses indicating the bird life on the Plains, the semiarid lands, and the deserts, both with and without irrigation; in the mountains of the West and the fruit districts of the Pacific slope; and in the South Atlantic and Gulf States, to represent both the uplands and the low coastal plain. These censuses will serve as a basis for determining what effect the present State and Federal laws may have on the increase of game and insectivorous birds.

Each person receiving this pamphlet is invited to aid in the work by taking a census of the birds breeding this summer on some area or areas selected to represent fairly the average farm conditions, but without much woodland. The tract should not be less than 40 acres—a quarter of a mile square—nor more than 80 acres, and should include the farm buildings, with the usual shade trees, orchards, etc., as well as fields of plowed land and of pasture or meadow.

The area should be selected not only with reference to the present summer's work, but should, if possible, be chosen so that the physical conditions will not be much changed for several years. If succeeding annual censuses show changes in the bird population, it will be known that they are not due to changed environment.

What is wanted is a census of the pairs of birds actually nesting within the selected area. Birds that visit the area for feeding purposes should not be counted, no matter how close their nests are to the boundary lines.

It is practically impossible to take this census on an area of 40 to 80 acres in a single day. A plan which has been used for several years near Washington, D. C., is to begin at daylight some morning the last of May or the first week in June and zigzag back and forth across the area, counting the male birds. Early in the morning at that season every male bird should be in full song and easily counted, and, since migration is ended and the birds are settled in their summer quarters, each male can safely be considered to represent a breeding pair.

The census of one day should be checked and revised by several days of further work in order to insure that each bird seen is actually nesting within the area and to make certain that no species has been overlooked.

The height of the breeding season should be chosen for this work. In the latitude of Washington, D. C.—latitude 39° —May 30 is about the proper date for the original census. In the latitude of Boston the work should not begin for a week later, while south of Washington an earlier date should be selected. For the western part of the country no definite dates can be laid down, since the proper time will vary according to latitude and altitude, but—and this applies to all localities—a date should be selected shortly after the close of migration and during the early part of the nesting season.

The final results of the census should be sent to this bureau about June 30, and should be accompanied by a statement of the exact boundaries of the selected area, defined so explicitly that it will be possible 25 years hence to have the census repeated. The name of the present owner should be given, together with a careful description of the character of the land, including a statement whether the area is dry upland or moist bottom land; the *number of acres* in each of the principal crops, or in permanent meadow, pasture, orchard, swamp, roads, etc.; the kind of fencing used, and whether there is much or little brush along any fences, roads, or streams, or in the permanent pasture.

If there is an isolated piece of woodland conveniently near and comprising 10 to 20 acres, a separate census made of the birds nesting

therein is desired. In this case the report, in addition to the size and exact boundaries of the wooded tract, should state the principal kinds of trees and whether there is much or little undergrowth.

A third census desired is that of some definite timbered area—40 acres, for instance—forming a part of a much larger tract of timber, either deciduous or evergreen. While the number of birds on such an area will differ from that on an equal area of mixed farm land, their correct enumeration will require considerably more care and time.

Still a fourth census, supplementary to those made the past two years, is desired. The average farm in the Northeastern States contains about 100 acres, and the average census received during the past two years gives the count of the birds nesting on the 50 acres of the farm nearest to and including the farm buildings. It is desired during 1916 to obtain some censuses of the remainder of the farm, the wilder part containing no buildings. Such censuses will be especially valuable if made on the same farms where the censuses about the buildings have already been taken.

These four kinds of bird censuses are desirable for a study of the relative abundance and shifting numbers of birds under changing or stationary conditions, and it is hoped that many persons interested in our bird life will take one or more censuses this season. As the department has no funds to pay for this work, we must depend wholly on voluntary observers.

HENRY W. HENSHAW,
Chief, Biological Survey.

